

Application No. 09/683,658  
Reply to Office Action of October 6, 2005

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### REMARKS

Applicant respectfully requests entry of this Amendment and reconsideration of the pending claims. In the alternative, Applicant respectfully requests entry of this Amendment for purposes of putting the application in better form for Appeal in accordance with 37 CFR § 1.113. Claims 107 – 111, 113 – 129, and 131-144 are cancelled for purposes of Appeal. Claims 104 - 106, 112, 130, 145-146 are currently pending.

#### 35 USC § 112

Objections have been addressed with amendments including the suggested language, where appropriate.

With regard to the rejections under 35 USC § 112, claim 131 is cancelled. Claim 130 appears to be misidentified as a “process limitation” in the Office Action. The phrase in question recites “the restraint is operable to transmit pressure to the capsule such that the transmitted pressure to the capsule is measurable as a pressure response of less than about 0.2”. The phrase is clearly a functional limitation. A functional limitation must be evaluated and considered, just like any other limitation of the claim for what it fairly conveys to a person of ordinary skill in the pertinent art in the context in which it is used. A functional limitation may be used in association with an element to define a particular capability or purpose that is served by the recited element. MPEP 2173.05(g). The claim in question is discussed further hereinbelow with reference to the cited art to help distinguish between a dynamic press that may transmit near 100% of the inwardly directed pressure to a load, and the claimed restraint that is passive in nature and does not generate a positive pressure on a load, but rather passively responds to an outwardly radiating force generated by the load itself.

Claims 139, 141-144 are cancelled to streamline the Application for Appeal.

Claim 145 recites that the “capsule and the restraint are cooperatively configured

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to maintain the seal at the internal pressure and at the corresponding temperature”, which is further clarified with reference to the “fluid [that] is sufficiently responsive to thermal energy to pressurize the capsule to an internal pressure in a range of greater than about 60 kbar”. Because the internal pressure generates from the fluid, as opposed to the presses in the cited art, the recitation of the fluid provides context for the functional limitations of the capsule and the restraint. Thus, the Applicant is not attempting to recite further structural limitations, as sought in the Office Action, but recites proper functional limitations, and provides context for those functional limitations. Applicant respectfully requests that the rejection be withdrawn.

Claim 146 was rejected under 35 USC § 112 for failing to provide clarity in that the restraint is “operable to provide no active pressure load to the capsule, or a pre-load pressure only to the capsule”. Applicant amends the language in an attempt to provide additional clarity and further prosecution. As such, Claim 146 is amended to read “the restraint is not operable to provide ~~no~~ an active pressure load to radially inward toward the capsule, ~~or a pre-load pressure only to the capsule.”~~ If other language would be more palatable, Applicant invites such suggestions. Otherwise, Applicant respectfully requests that the rejection be withdrawn.

#### 35 USC § 102

With regard to the rejections under 35 USC § 102(b) as being anticipated by Wilson et al., Applicant again submits that the apparatus shown or disclosed differs from the invention as defined in independent claims 104 and 146. The presses in the cited reference supply the pressure to the object being worked on, and it is not the object itself that creates the pressure. In Wilson et al., “two press pistons 23 and 24 having tungsten carbide end elements 26 and 27 configured to cooperate with counterbores 18 and 19 and bore 17 *in order to impose pressure on the sample contained within the bore 17.*” (Emphasis added) (Column 3, lines 15-19).

In both of claims 104 and 146, the restraint is passive, and the pressure that the

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restraint supplies is merely to resist the outward force generated by the heating of the sealed capsule. The resultant passive force differs in several ways from the force supplied by an active press. For example, in one instance the presses in the cited art must be active through the entire process, whereas a passive restraint simply resists by virtue of its configuration and composition – no energy needs to be expended. In another instance, the control of the pressure can be performed using a heat control system, as opposed to the cited references that need mechanically control the press.

Also ignored are the recitations of “to maintain the chamber at a substantially constant volume” and “to maintain the chamber at about a constant volume”. The presses of Wilson et al. are designed for, and used to, squeeze and decrease volume to increase pressure. If the presses maintained a constant volume, there would not be the pressure increase that the presses were intended for. To suggest that the presses of the cited art be present, activated, but not to press defeats the intended use of the presses in the cited art. Neither the structure nor the function of the claimed invention is disclosed in any of the cited references. Applicant submits that the rewritten claims 104 and 146 are allowable over the cited references.

For claim 130, “the restraint is operable to transmit pressure to the capsule such that the transmitted pressure to the capsule is measurable as a pressure response of less than about 0.2”. The apparatus of Wilson et al. requires that the pressure from the press be transmitted to the subject material. Thus, the pressure transmission efficiency, or pressure response, should be as high as possible – 100% if there were no friction. For all of the pressure vessels shown in the cited references, a reduction of pressure response to near zero would be entirely unsuitable, and would at the very least be opposite the desired result of the disclosed art. It is not permissible to modify cited art in a manner that renders it unsuitable for its intended use. Here, removing the presses of Wilson et al. or the pressing that they provide would eviscerate the teaching of that art. Replacing the presses with an immovable passive restraint is neither disclosed, contemplated, or

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possible with the apparatus disclosed in Wilson et al. Holding the presses still removes their function as a press – they cannot press unless they move.

Claim 145 defines a capsule that can withstand a pressure of greater than about 60 kBar. Pressure limits for capsules or cells in Wilson et al. are disclosed to be up to 60 kBars (col. 2, l. 58, and col. 3, l. 44, respectively). For at least claim 145, Wilson et al. does not disclose or enable a pressure capability approaching the claim definition. Without enablement, there can be no anticipation.

Claim 146 incorporates many of the features found in other claims, but has a different claim scope. Claim 146 is allowable for at least the reasons listed above for such corresponding claims. Further, the structure of Wilson et al. differs in that the apparatus does not have the properties of “operable to maintain a seal while the capsule is subject to a predetermined temperature and to a predetermined pressure” wherein at least for claim 146 the “capsule is subject to a predetermined temperature and to a pressure in a range of up to about 80 kBar”. Neither does the Wilson et al. apparatus disclose or suggest a seal proof against ammonia under the defined conditions.

Claim 146 specifically calls out ammonia as the fluid to be added, not water as disclosed in Wilson et al. Amended Claim 146 makes the fluid a positive claim element, and thus Wilson et al. does not anticipate.

It should be noted for both independent claims 104 and 146 that supercritical does not mean just very hot or very high pressure. There is a phase diagram for each material that defines a relationship of temperature to pressure for supercriticality. The notion that because a reference, like Wilson et al., shows a high pressure or a high temperature, or both, that a supercritical state is inherent or even achievable is disingenuous. If it is the position of the United States Patent and Trademark Office that hot water is the equivalent of supercritical ammonia, a positive statement to that effect would be appreciated for purposes of formulating a response. As it stands, Applicant is left a statement of “need only be capable of performing the intended use”. A cup can receive water and can

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receive a strong acid or solvent. That does not make the cup suitable for use with either the acid or solvent, as such may likely destroy the cup before any use can be made of it. Applicant submits that "inherently capable of receiving" is not the standard for which enabling prior art may anticipate the claimed invention. As for the "must result in a structural difference", structural differences may be set forth in functional language, as discussed hereinabove. Applicant submits that none of the pending claims are anticipated by the cited art, particularly amended Claim 146 that now positively recites ammonia. Notice to that effect is respectfully requested.

35 USC § 103

Claim 106 is the only claim, not cancelled, that stands rejected under 35 USC § 103. Depending from allowable claim 104, the claim is allowable for at least the reasons that claim 104 is allowable.

Claim 106 recites a "heating system that includes the energy source and a temperature sensor, wherein the temperature sensor is disposed proximate to the capsule and is operable to sense a temperature of the capsule". The Office Action admits that Wilson et al. "is silent as to the control system being operable to provide a closed loop temperature control of the heating system, in response to a signal generated by a temperature sensor disposed proximate to the capsule". The Office Action continues, "it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a temperature sensor and to configure a closed loop temperature control scheme for the control system in the apparatus of Wilson et al. on the basis of suitability for intended use".

However, Applicant submits that this is not the standard for a *prima facie* case of obviousness. That a cited reference *may be* modified is not the standard, rather a reason for the combination or modification must be given. Clearly, Wilson et al did not believe a sensor was necessary, otherwise they would have disclosed one. Similarly, Hall et al. does not disclose other elements of the claimed invention because that was not the intent

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or understanding of Hall et al. For the cited art to be combined, without the benefit of impermissible hindsight reconstruction, there must be some reason or motivation provided beyond mere "because it is well known in the art to connect a control system with a temperature sensor to enable precise, closed loop control of the reaction temperature". The closed loop control is disclosed in claim 106, and not disclosed in Wilson et al. Hall et al. provides no insight as to whether a control system as disclosed therein would be a boon to the invention of Wilson et al., or even if the combination would be basically functional to carry out the reaction of Wilson et al. who did not appear to need the modification the Office Action suggests.

In addition, the Office Action states that the replacement of manual means with automated means is obvious. That does not appear to be in dispute. Claim 106 includes a sensor, and Wilson et al. does not disclose such a structural or functional element. The Office Action attempts cure this deficiency by combining elements of Wilson et al. and Hall et al. The result of the combination is, unfortunately, a combination of a reaction that does not appear to need a sensor, and likely is workable in large temperature ranges, with a reaction that uses a sensor. Applicant submits that an explanation would be useful as to why one of ordinary skill in the art would take a simple and functional apparatus as shown in Wilson et al. and start adding components and control systems to increase the complexity and cost. As no such explanation has been proffered, Applicant submits that a *prima facie* case of obviousness has not been made, the rejection should be withdrawn, and a notice to that effect is respectfully requested.

Improper Final Rejection.

Under present practice, second or any subsequent actions on the merits shall be final, except where a new ground of rejection is introduced that is neither necessitated by applicant's amendment of the claims nor based on information submitted in an information disclosure statement filed during the period set forth in 37 CFR 1.97(c). MPEP 706.07(a). Applicant submits that at least claim 106, now rejected under 35 USC

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§ 103(1) in view of Strong ('170), does not necessitate a new ground of rejection nor is based on information submitted in an information disclosure statement during the requisite period. The subject matter of at least claim 106 is present in the original claims, and this Reply is the first opportunity Applicant has had to respond to the rejection over art cited for the first time and listed on Form 892. Applicant respectfully requests withdrawal of the finality of the rejection, preferably before the filing of the Appeal Brief that corresponds to the co-filed Notice of Appeal.

Applicant submits that the pending claims are allowable over the cited art, and respectfully requests that a notice to that effect be issued. In the alternative, the finality of the Office Action should be withdrawn. Applicant files herewith a Notice of Appeal, and requests that, at a minimum, this Amendment be entered to cancel claims and put the Application in better form for Appeal. The Examiner is invited to contact the Applicant's undersigned representative at the telephone number below. Any additional fees for this Reply, or the accompanying Notice of Appeal, are hereby petitioned for, and the Director is authorized to charge such fees as may be required to Deposit Account 07-0868.

Respectfully submitted,

  
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